

VIII - Mathematics
Understanding Quadrilaterals
Academic Year 2011-2012

- 1) The sum of the angles of a polygon with n - sides is _____.
- 2) The external angle of a regular polygon is 20° . How many sides does it have ?
What is the measure of each interior angle. What is the total measure of its angles.
- 3) Is it possible to have a regular polygon with measure of each exterior angle as 58° ? Why ? can it be an int.angle of a regular polygon ?
- 4) Find the measure of each exterior angle of a
 - (i) Regular octagon
 - (ii) Regular Decagon
- 5) Find the perimeter of a parallelogram with sides 9cm and 5cm.
- 6) Find the perimeter of a rhombus whose diagonals are 16cm and 12cm
- 7) The adjacent angles of a parallelogram are in the ratio 5:4 . Find all the angles.
- 8) If one of the angles of a parallelogram is a right angle, Prove that it is a rectangle.
- 9) If all the angles of a parallelogram are equal. Prove that it is a rectangle.
- 10) Find the length of the diagonal of a rectangle whose length is 15cm and breadth is 8cm.
- 11) A square is a convex polygon. Explain why ?
- 12) The measure of two adjacent angles of a quadrilateral are 110° and 50° and the other two acute angles are equal. Find the measure of each angle.
- 13) The five angles of a pentagon are in the ratio 5 : 6 : 7 : 8 :10. Find all the angles.
- 14) GOAL is a quadrilateral in which $GO \parallel AL$. If $\angle G = \angle O = 40^\circ$.

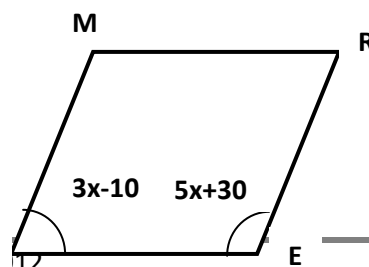
What are the measures of $\angle A$ and $\angle L$.

- 15) ABCD is a parallelogram what specific name can be given to it if the following additional facts are true ?

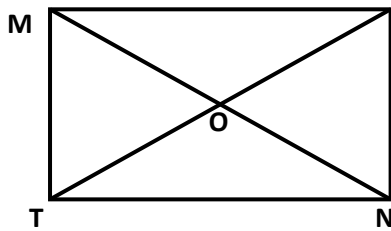
(i) $AB = AD$ (ii) $\angle DAB = 90^\circ$ (iii) $AB = AD$ and $\angle DAB = 90^\circ$

- 16) Find the values of x and y in each case.

(i) TERM is a parallelogram



ii) MINT is a rectangle



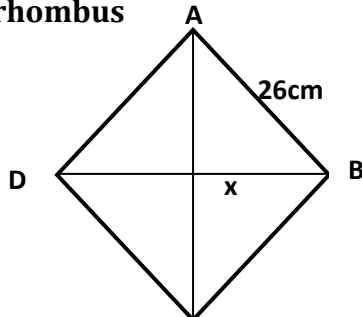
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$$OM = 5x + 2$$

$$OI = 17$$

Find MN also.

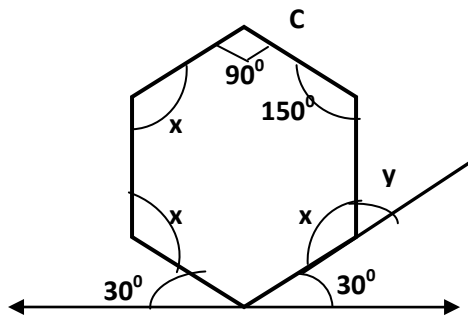
iii) ABCD is a rhombus



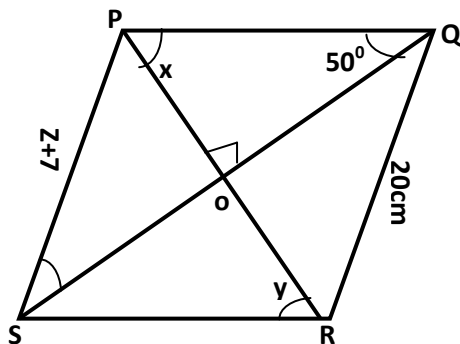
$$AB = 26\text{cm}$$

$$AC = 48\text{cm}$$

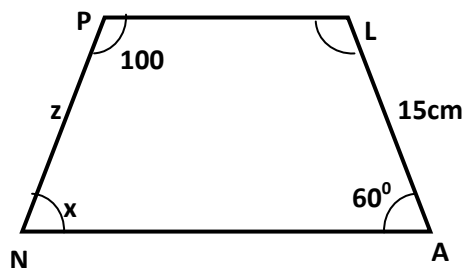
(iv)



(v) PQRS is a parallelogram (find z also)



vi) PLAN is a isosceles trapezium in which $PL \parallel NA$ (find z also)



17. What you will call a rhombus in which one angle is 90° .

Answers:

1. $(n-2) \times 180$
2. 18, 160, 2880
3. No, no
4. $45^\circ, 36^\circ$
5. 28cm
6. 40cm
7. $100^\circ, 80^\circ, 100^\circ, 80^\circ$

8 & 9) Hint : If all angles are 90, it is a rectangle.

10. 17 cm (use Pythagoras theorem)

12. 50, 50, 50, 110

13. $75^\circ, 90, 105, 120$ & 150

14. 140, 140

15. (i) Rhombus (ii) Rectangle (iii) Square

16. (i) 20° (ii) $x=3$ MN = 6cm (iii) 10cm (iv) 120°

(v) $x=40^\circ$ $y=40^\circ$ $z=13\text{cm}$ (vi) $x=80^\circ$, $y=120^\circ$ $z=15\text{cm}$

17. Square.